

WHAT IS CLAIMED IS:

1. A method of preventing a viral infection in a subject, said method comprising administering to the subject:

(i) a prophylactically effective amount of one or more first antibodies or antigen-binding fragments thereof, wherein one or more of said first antibodies or antigen-binding fragments thereof bind immunospecifically to a RSV antigen; and

(ii) a prophylactically effective amount of one or more second antibodies or antigen-binding fragments thereof, wherein one or more of said second antibodies or antigen-binding fragments thereof bind immunospecifically to a hMPV antigen.

2. The method of claim 1, wherein one or more of said first antibodies or antigen-binding fragments thereof neutralize RSV.

3. The method of claim 1, wherein one or more of said second antibodies or antigen-binding fragments thereof neutralize hMPV.

4. The method of claim 1, wherein one or more of said first antibodies or antigen-binding fragments thereof block RSV infection of cells of the subject.

5. The method of claim 1, wherein one or more of said second antibodies or antigen-binding fragments thereof block hMPV infection of cells of the subject.

6. A method of treating one or more symptoms of a respiratory viral infection in a subject, said method comprising administering to the subject:

(i) a therapeutically effective amount of one or more first antibodies or antigen-binding fragments thereof, wherein one or more of said first antibodies or antigen-binding fragments thereof bind immunospecifically to a RSV antigen; and

(ii) a therapeutically effective amount of one or more second antibodies or antigen-binding fragments thereof, wherein one or more of said second antibodies or antigen-binding fragments thereof bind immunospecifically to a hMPV antigen.

7. A method of passive immunotherapy, said method comprising administering to a subject:

(i) a first dose of one or more first antibodies or antigen-binding fragments thereof, wherein one or more of said first antibodies or a fragments thereof bind immunospecifically to a RSV antigen; and

(ii) a second dose of one or more second antibodies or antigen-binding fragments thereof, wherein one or more of said second antibodies or a fragments thereof bind immunospecifically to a hMPV antigen,

wherein the first dose reduces the incidence of RSV infection by at least 25% and

5 wherein the second dose reduces the incidence of hMPV infection by at least 25%.

8. A method of passive immunotherapy, said method comprising administering to a subject:

(i) a first dose of one or more first antibodies or antigen-binding fragments thereof, wherein one or more of said first antibodies or antigen-binding fragments thereof bind immunospecifically to a RSV antigen; and

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(ii) a second dose of one or more second antibodies or antigen-binding fragments thereof, wherein one or more of said second antibodies or antigen-binding fragments thereof bind immunospecifically to a hMPV antigen,

wherein the serum titer of one or more of said first antibodies or antigen-binding

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fragments thereof in the subject is at least 10  $\mu\text{g/ml}$  after 15 days of administering one or more of said first antibodies or antigen-binding fragments thereof and wherein the serum titer of one or more of said second antibodies or antigen-binding fragments thereof in the subject is at least 10  $\mu\text{g/ml}$  after 15 days of administering one or more of said second antibodies or antigen-binding fragments thereof.

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9. The method of claim 1, 6, 7, or 8, wherein the amino acid sequence of the RSV antigen is that of SEQ ID NO:390 to 398, respectively.

10. The method of claim 1, 6, 7, or 8, wherein the amino acid sequence of the RSV antigen is 90% identical to the amino acid sequence of RSV nucleoprotein, RSV phosphoprotein, RSV matrix protein, RSV small hydrophobic protein, RSV RNA-dependent RNA polymerase, RSV F protein, or RSV G protein.

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11. The method of claim 1, 6, 7, or 8, wherein the RSV antigen is selected from the group consisting of RSV nucleoprotein, RSV phosphoprotein, RSV matrix protein, RSV small hydrophobic protein, RSV RNA-dependent RNA polymerase, RSV F protein, and RSV G protein.

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12. The method of claim 1, 6, 7, or 8, wherein one or more of said first antibodies immunospecifically bind to an antigen of Group A or Group B RSV.

13. The method of claim 1, 6, 7, or 8, wherein the RSV antigen is RSV F protein.

14. The method of claim 1, 6, 7, or 8, wherein one or more of said second antibodies cross-react with a turkey APV antigen.

15. The method of claim 1, 6, 7, or 8, wherein one or more of said second antibodies are (i) human or humanized antibodies and (ii) cross-react with a turkey APV antigen.

16. The method of claim 15, wherein said turkey APV antigen is selected from the group consisting of turkey APV nucleoprotein, turkey APV phosphoprotein, turkey APV matrix protein, turkey APV small hydrophobic protein, turkey APV RNA-dependent RNA polymerase, turkey APV F protein, and turkey APV G protein.

17. The method of claim 15, wherein said turkey APV antigen is an antigen of avian pneumovirus type A, avian pneumovirus type B, or avian pneumovirus type C.

18. The method of claim 15, wherein the amino acid sequence of said turkey APV antigen is that of SEQ ID NO:424 to 429, respectively.

19. The method of claim 1, 6, 7, or 8, wherein the amino acid sequence of the hMPV antigen is that of SEQ ID NO: 399-406, 420, or 421, respectively.

20. The method of claim 1, 6, 7, or 8, wherein the hMPV antigen is selected from the group consisting of hMPV nucleoprotein, hMPV phosphoprotein, hMPV matrix protein, hMPV small hydrophobic protein, hMPV RNA-dependent RNA polymerase, hMPV F protein, and hMPV G protein.

21. The method of claim 1, 6, 7, or 8, wherein the hMPV antigen is hMPV F protein.

22. The method of claim 1, 6, 7, or 8, wherein the first antibody is Palivizumab; AFFF; P12f2 P12f4; P11d4; Ale9; A12a6; A13c4; A17d4; A4B4; 1X-493L1; FR H3-3F4; M3H9; Y10H6; DG; AFFF(1); 6H8; L1-7E5; L2-15B10; A13a11; A1h5; A4B4(1);A4B4-F52S; or A4B4L1FR-S28R.

23. The method of claim 1, 6, 7, or 8, wherein one or more of said first antibodies or antigen-binding fragments thereof are administered at a time period prior to administering of one or more of said second antibodies or antigen-binding fragments thereof.

24. The method of claim 1, 6, 7, or 8, wherein one or more of said second antibodies or antigen-binding fragments thereof are administered at a time period prior to administering of one or more of said first antibodies or antigen-binding fragments thereof.

25. The method of claim 1, 6, 7, or 8, wherein one or more of said first antibodies or antigen-binding fragments thereof and one or more of said second antibodies or antigen-binding fragments thereof are administered concurrently.

26. The method of claim 1, 6, 7, or 8, wherein one or more of said first antibodies or antigen-binding fragments thereof are administered in a sequence of two or more administrations, wherein the administrations of one or more of said first antibodies or antigen-binding fragments thereof are separated by a time period from each other, and  
5 wherein one or more of said second antibodies or antigen-binding fragments thereof are administered before, during, or after the sequence.

27. The method of claim 1, 6, 7, or 8, wherein one or more of said first antibodies or antigen-binding fragments thereof are administered in a sequence of two or more administrations, wherein the administrations of one or more of said second antibodies  
10 or antigen-binding fragments thereof are separated by a time period from each other, and wherein one or more of said first antibodies or antigen-binding fragments thereof are administered before, during, or after the sequence.

28. The method of claim 1, 6, 7, or 8, wherein one or more of said first antibodies or antigen-binding fragments thereof and one or more of said second antibodies or  
15 antigen-binding fragments thereof are administered in a sequence of two or more administrations, wherein the administrations are separated by a time period from each other.

29. The method of claim 1 or 6, wherein the viral infection is an infection with RSV and hMPV or an infection with RSV and APV.

30. A method of preventing a viral infection in a subject, said method  
20 comprising administering to the subject:

- (i) a dose of one or more antibodies or antigen-binding fragments thereof, wherein one or more of said antibodies or antigen-binding fragments thereof
- (i) are human or humanized, (ii) cross-react with a turkey APV antigen, and
- (iii) bind immunospecifically to a hMPV antigen.

31. A method of treating one or more symptoms of a respiratory viral infection  
25 in a subject, said method comprising administering to the subject:

- (i) a dose of one or more antibodies or antigen-binding fragments thereof, wherein one or more of said antibodies or antigen-binding fragments thereof
- (i) are human or humanized, (ii) cross-react with a turkey APV antigen, and
- (iii) bind immunospecifically to a hMPV antigen.

32. A method of passive immunotherapy, said method comprising administering  
30 to a subject:

- (i) a dose of one or more antibodies or antigen-binding fragments thereof, wherein one or more of said antibodies or antigen-binding fragments thereof

(i) are human or humanized, (ii) cross-react with a turkey APV antigen, and  
(iii) bind immunospecifically to a hMPV antigen,  
wherein the dose reduces the incidence of hMPV infection by at least 25%.

33. A method of passive immunotherapy, said method comprising administering  
5 to a subject:

(i) a dose of one or more antibodies or antigen-binding fragments thereof,  
wherein one or more of said antibodies or antigen-binding fragments thereof  
(i) are human or humanized, (ii) cross-react with a turkey APV antigen, and  
(iii) bind immunospecifically to a hMPV antigen,  
10 wherein the serum titer of one or more of said antibodies or antigen-binding  
fragments thereof in the subject is at least 10  $\mu\text{g/ml}$  after 15 days of administering one or  
more of said antibodies or antigen-binding fragments thereof.

34. A pharmaceutical composition, said composition comprising:

(i) one or more first antibodies or antigen-binding fragments thereof, wherein  
15 one or more of said first antibodies or antigen-binding fragments thereof bind  
immunospecifically to a RSV antigen; and  
(ii) one or more second antibodies or antigen-binding fragments thereof,  
wherein one or more of said second antibodies or antigen-binding fragments  
thereof bind immunospecifically to a hMPV antigen.

20 35. The pharmaceutical composition of claim 34, wherein the amino acid  
sequence of the RSV antigen is that of SEQ ID NO:390 to 398, respectively.

36. The pharmaceutical composition of claim 34, wherein the amino acid  
sequence of the RSV antigen is 90% identical to the amino acid sequence of RSV  
nucleoprotein, RSV phosphoprotein, RSV matrix protein, RSV small hydrophobic protein,  
25 RSV RNA-dependent RNA polymerase, RSV F protein, or RSV G protein.

37. The pharmaceutical composition of claim 34, wherein the RSV antigen is  
selected from the group consisting of RSV nucleoprotein, RSV phosphoprotein, RSV matrix  
protein, RSV small hydrophobic protein, RSV RNA-dependent RNA polymerase, RSV F  
protein, and RSV G protein.

30 38. The pharmaceutical composition of claim 34, wherein one or more of said  
first antibodies or antigen-binding fragments thereof immunospecifically bind to an antigen  
of Group A or Group B RSV.

39. The pharmaceutical composition of claim 34, wherein the RSV antigen is  
RSV F protein.

40. The pharmaceutical composition of claim 34, wherein one or more of said second antibodies cross-react with a turkey APV antigen.

41. The pharmaceutical composition of claim 34, wherein one or more of said second antibodies are (i) human or humanized antibodies and (ii) cross-react with a turkey  
5 APV antigen.

42. The pharmaceutical composition of claim 40, wherein said turkey APV antigen is selected from the group consisting of turkey APV nucleoprotein, turkey APV phosphoprotein, turkey APV matrix protein, turkey APV small hydrophobic protein, turkey APV RNA-dependent RNA polymerase, turkey APV F protein, and turkey APV G protein.

10 43. The pharmaceutical composition of claim 40, wherein said turkey APV antigen is an antigen of avian pneumovirus type A, avian pneumovirus type B, or avian pneumovirus type C.

44. The pharmaceutical composition of claim 40, wherein the amino acid sequence of said turkey APV antigen is that of SEQ ID NO:424 to 429, respectively.

15 45. The pharmaceutical composition of claim 34, wherein the amino acid sequence of the hMPV antigen is that of SEQ ID NO: 399-406, 420, or 421, respectively.

46. The pharmaceutical composition of claim 34, wherein the hMPV antigen is selected from the group consisting of hMPV nucleoprotein, hMPV phosphoprotein, hMPV matrix protein, hMPV small hydrophobic protein, hMPV RNA-dependent RNA polymerase,  
20 hMPV F protein, and hMPV G protein.

47. The pharmaceutical composition of claim 34, wherein the hMPV antigen is hMPV F protein.

48. The pharmaceutical composition of claim 34, wherein the first antibody is Palivizumab; AFFF; P12f2 P12f4; P11d4; Ale9; A12a6; A13c4; A17d4; A4B4; 1X-493L1;  
25 FR H3-3F4; M3H9; Y10H6; DG; AFFF(1); 6H8; L1-7E5; L2-15B10; A13a11; A1h5; A4B4(1);A4B4-F52S; or A4B4L1FR-S28R.

49. A pharmaceutical composition, said composition comprising: one or more antibodies or antigen-binding fragments thereof, wherein one or more of said antibodies or antigen-binding fragments thereof (i) are human or humanized, (ii) cross-react with a turkey  
30 APV antigen, and (iii) bind immunospecifically to a hMPV antigen.

50. A method of preventing a viral infection in a subject, said method comprising administering to the subject:

(i) a prophylactically effective amount of one or more first antibodies or antigen-binding fragments thereof, wherein one or more of said first

antibodies or antigen-binding fragments thereof bind immunospecifically to a PIV antigen; and

(ii) a prophylactically effective amount of one or more second antibodies or antigen-binding fragments thereof, wherein one or more of said second antibodies or antigen-binding fragments thereof bind immunospecifically to a hMPV antigen.

51. The method of claim 50, wherein one or more of said first antibodies or antigen-binding fragments thereof neutralize PIV.

52. The method of claim 50, wherein one or more of said second antibodies or antigen-binding fragments thereof neutralize hMPV.

53. The method of claim 50, wherein one or more of said first antibodies or antigen-binding fragments thereof block PIV infection of cells of the subject.

54. The method of claim 50, wherein one or more of said second antibodies or antigen-binding fragments thereof block hMPV infection of cells of the subject.

55. A method of treating one or more symptoms of a respiratory viral infection in a subject, said method comprising administering to the subject:

(i) a therapeutically effective amount of one or more first antibodies or antigen-binding fragments thereof, wherein one or more of said first antibodies or antigen-binding fragments thereof bind immunospecifically to a PIV antigen; and

(ii) a therapeutically effective amount of one or more second antibodies or antigen-binding fragments thereof, wherein one or more of said second antibodies or antigen-binding fragments thereof bind immunospecifically to a hMPV antigen.

56. A method of passive immunotherapy, said method comprising administering to a subject:

(i) a first dose of one or more first antibodies or antigen-binding fragments thereof, wherein one or more of said first antibodies or a fragments thereof bind immunospecifically to a PIV antigen; and

(ii) a second dose of one or more second antibodies or antigen-binding fragments thereof, wherein one or more of said second antibodies or a fragments thereof bind immunospecifically to a hMPV antigen,

wherein the first dose reduces the incidence of PIV infection by at least 25% and wherein the second dose reduces the incidence of hMPV infection by at least 25%.

57. A method of passive immunotherapy, said method comprising administering to a subject:

- (i) a first dose of one or more first antibodies or antigen-binding fragments thereof, wherein one or more of said first antibodies or antigen-binding fragments thereof bind immunospecifically to a PIV antigen; and
- (ii) a second dose of one or more second antibodies or antigen-binding fragments thereof, wherein one or more of said second antibodies or antigen-binding fragments thereof bind immunospecifically to a hMPV antigen,

wherein the serum titer of one or more of said first antibodies or antigen-binding fragments thereof in the subject is at least 10  $\mu\text{g/ml}$  after 15 days of administering one or more of said first antibodies or antigen-binding fragments thereof and wherein the serum titer of one or more of said second antibodies or antigen-binding fragments thereof in the subject is at least 10  $\mu\text{g/ml}$  after 15 days of administering one or more of said second antibodies or antigen-binding fragments thereof.

58. The method of claim 50, 55, 56, or 57, wherein the amino acid sequence of the PIV antigen is that of SEQ ID NO:407 to 419, respectively.

59. The method of claim 50, 55, 56, or 57, wherein the amino acid sequence of the PIV antigen is 90% identical to the amino acid sequence of PIV nucleocapsid phosphoprotein, PIV L protein, PIV matrix protein, PIV HN glycoprotein, PIV RNA-dependent RNA polymerase, PIV Y1 protein, PIV D protein, or PIV C protein.

60. The method of claim 50, 55, 56, or 57, wherein the PIV antigen is selected from the group consisting of PIV nucleocapsid phosphoprotein, PIV L protein, PIV matrix protein, PIV HN glycoprotein, PIV RNA-dependent RNA polymerase, PIV Y1 protein, PIV D protein, or PIV C protein.

61. The method of claim 50, 55, 56, or 57, wherein one or more of said first antibodies immunospecifically bind to an antigen of human PIV type 1, human PIV type 2, human PIV type 3, or human PIV type 4.

62. The method of claim 50, 55, 56, or 57, wherein the PIV antigen is PIV F protein.

63. The method of claim 50, 55, 56, or 57, wherein one or more of said second antibodies cross-react with a turkey APV antigen.

64. The method of claim 50, 55, 56, or 57, wherein one or more of said second antibodies are (i) human or humanized antibodies and (ii) cross-react with a turkey APV antigen.



65. The method of claim 63, or 64, wherein said turkey APV antigen is selected from the group consisting of turkey APV nucleoprotein, turkey APV phosphoprotein, turkey APV matrix protein, turkey APV small hydrophobic protein, turkey APV RNA-dependent RNA polymerase, turkey APV F protein, and turkey APV G protein.

5 66. The method of claim 63, 64, wherein said turkey APV antigen is an antigen of avian pneumovirus type A, avian pneumovirus type B, or avian pneumovirus type C.

67. The method of claim 63, or 64, wherein the amino acid sequence of said turkey APV antigen is that of SEQ ID NO:424 to 429, respectively.

10 68. The method of claim 50, 55, 56, or 57, wherein the amino acid sequence of the hMPV antigen is that of SEQ ID NO: 399-406, 420, or 421, respectively.

69. The method of claim 50, 55, 56, or 57, wherein the hMPV antigen is selected from the group consisting of hMPV nucleoprotein, hMPV phosphoprotein, hMPV matrix protein, hMPV small hydrophobic protein, hMPV RNA-dependent RNA polymerase, hMPV F protein, and hMPV G protein.

15 70. The method of claim 50, 55, 56, or 57, wherein the hMPV antigen is hMPV F protein.

71. The method of claim 50 or 107, wherein the viral infection is an infection with PIV and hMPV or an infection with PIV and APV.

20 72. A method of preventing a viral infection in a subject, said method comprising administering to the subject:

(i) a prophylactically effective amount of one or more first antibodies or antigen-binding fragments thereof, wherein one or more of said first antibodies or antigen-binding fragments thereof bind immunospecifically to a RSV antigen;

25 (ii) a prophylactically effective amount of one or more second antibodies or antigen-binding fragments thereof, wherein one or more of said second antibodies or antigen-binding fragments thereof bind immunospecifically to a hMPV antigen; and

30 (iii) a prophylactically effective amount of one or more third antibodies or antigen-binding fragments thereof, wherein one or more of said third antibodies or antigen-binding fragments thereof bind immunospecifically to a PIV antigen.

73. The method of claim 72, wherein one or more of said first antibodies or antigen-binding fragments thereof neutralize RSV.

74. The method of claim 72, wherein one or more of said second antibodies or antigen-binding fragments thereof neutralize hMPV.

75. The method of claim 72, wherein one or more of said third antibodies or antigen-binding fragments thereof neutralize PIV.

5 76. The method of claim 72, wherein one or more of said first antibodies or antigen-binding fragments thereof block RSV infection of cells of the subject.

77. The method of claim 72, wherein one or more of said second antibodies or antigen-binding fragments thereof block hMPV infection of cells of the subject.

10 78. The method of claim 72, wherein one or more of said third antibodies or antigen-binding fragments thereof block PIV infection of cells of the subject.

79. A method of treating one or more symptoms of a respiratory viral infection in a subject, said method comprising administering to the subject:

(i) a therapeutically effective amount of one or more first antibodies or antigen-binding fragments thereof, wherein one or more of said first antibodies or antigen-binding fragments thereof bind immunospecifically to a RSV antigen;

(ii) a therapeutically effective amount of one or more second antibodies or antigen-binding fragments thereof, wherein one or more of said second antibodies or antigen-binding fragments thereof bind immunospecifically to a hMPV antigen; and

(iii) a therapeutically effective amount of one or more third antibodies or antigen-binding fragments thereof, wherein one or more of said third antibodies or antigen-binding fragments thereof bind immunospecifically to a PIV antigen.

80. A method of passive immunotherapy, said method comprising administering to a subject:

(i) a first dose of one or more first antibodies or antigen-binding fragments thereof, wherein one or more of said first antibodies or a fragments thereof bind immunospecifically to a RSV antigen;

(ii) a second dose of one or more second antibodies or antigen-binding fragments thereof, wherein one or more of said second antibodies or a fragments thereof bind immunospecifically to a hMPV antigen; and

(iii) a third dose of one or more third antibodies or antigen-binding fragments thereof, wherein one or more of said third antibodies or antigen-binding fragments thereof bind immunospecifically to a PIV antigen.

wherein the first dose reduces the incidence of RSV infection by at least 25%,

5 wherein the second dose reduces the incidence of hMPV infection by at least 25%, and

wherein the third dose reduces the incidence of PIV infection by at least 25%.

81. A method of passive immunotherapy, said method comprising administering to a subject:

- 10 (i) a first dose of one or more first antibodies or antigen-binding fragments thereof, wherein one or more of said first antibodies or antigen-binding fragments thereof bind immunospecifically to a RSV antigen;
- (ii) a second dose of one or more second antibodies or antigen-binding fragments thereof, wherein one or more of said second antibodies or antigen-binding fragments thereof bind immunospecifically to a hMPV antigen; and
- 15 (iii) a third dose of one or more third antibodies or antigen-binding fragments thereof, wherein one or more of said third antibodies or antigen-binding fragments thereof bind immunospecifically to a PIV antigen,

wherein the serum titer of one or more of said first antibodies or antigen-binding fragments thereof in the subject is at least 10  $\mu\text{g/ml}$  after 15 days of administering one or

20 more of said first antibodies or antigen-binding fragments thereof, wherein the serum titer of one or more of said second antibodies or antigen-binding fragments thereof in the subject is at least 10  $\mu\text{g/ml}$  after 15 days of administering one or more of said second antibodies or antigen-binding fragments thereof, and wherein the serum titer of one or more of said third

25 antibodies or antigen-binding fragments thereof in the subject is at least 10  $\mu\text{g/ml}$  after 15 days of administering one or more of said third antibodies or antigen-binding fragments thereof.

82. The method of claim 79, 80, or 81, wherein the amino acid sequence of the PIV antigen is that of SEQ ID NO:407 to 419, respectively.

83. The method of claim 79, 80, or 81, wherein the amino acid sequence of the

30 PIV antigen is 90% identical to the amino acid sequence of PIV nucleoprotein, PIV phosphoprotein, PIV matrix protein, PIV small hydrophobic protein, PIV RNA-dependent RNA polymerase, PIV F protein, or PIV G protein.

84. The method of claim 79, 80, or 81, wherein the PIV antigen is selected from the group consisting of PIV nucleoprotein, PIV phosphoprotein, PIV matrix protein, PIV

small hydrophobic protein, PIV RNA-dependent RNA polymerase, PIV F protein, and PIV G protein.